20820 '28h80T

FIG. 1

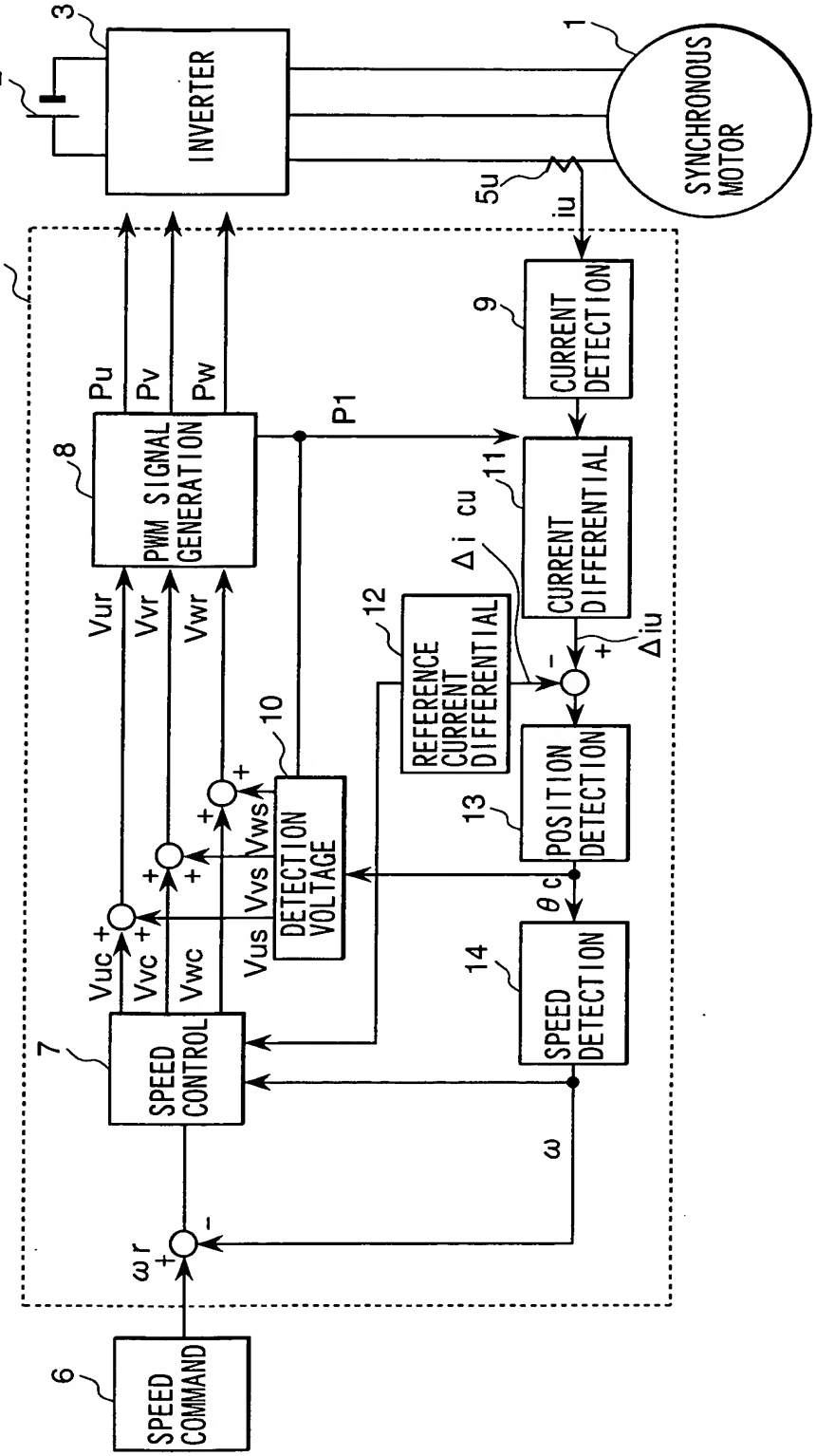

FIG. 2(a)

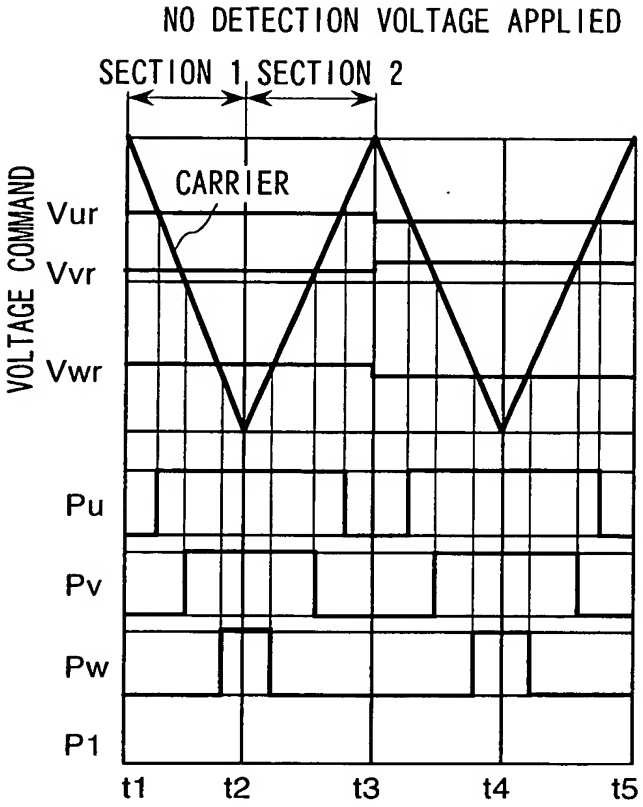


FIG. 2(b)

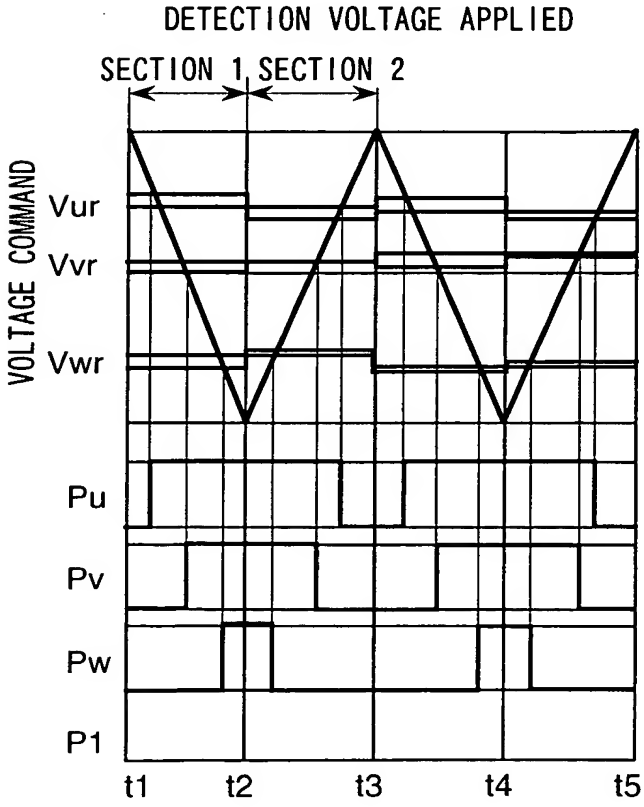


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FIG. 3

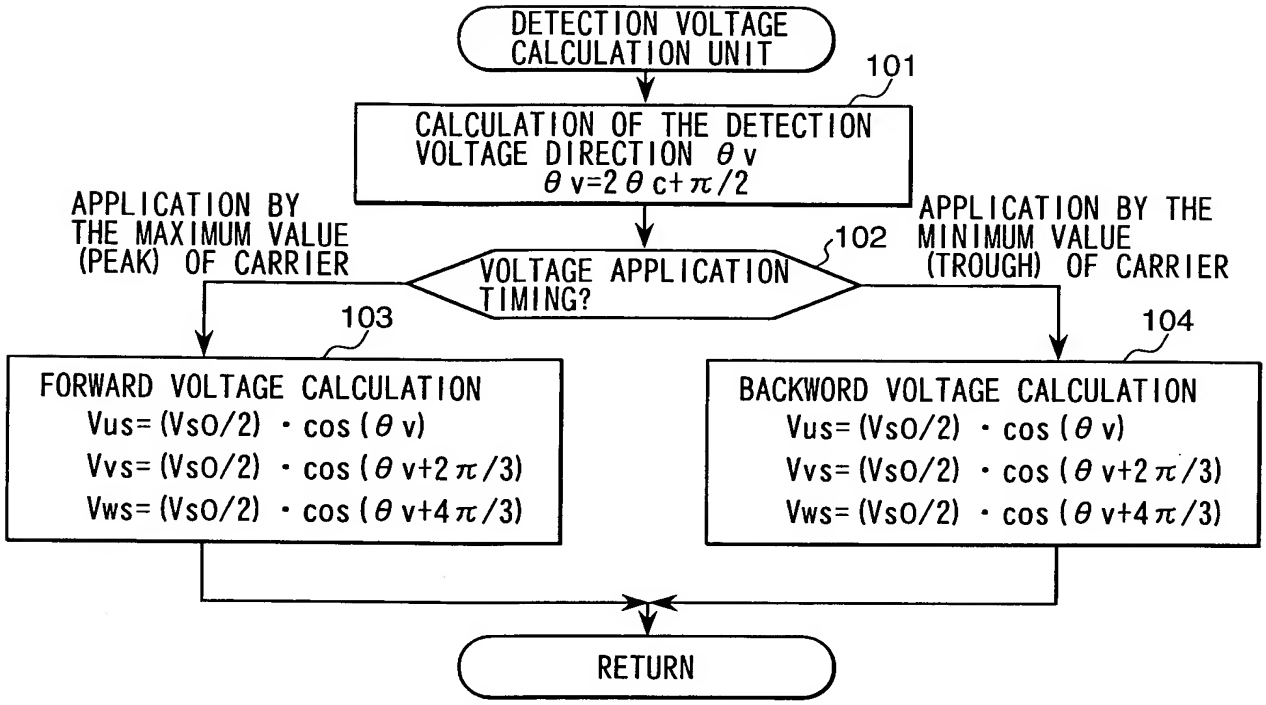
DETECTION VOLTAGE CALCULATION UNIT
101
CALCULATION OF THE DETECTION VOLTAGE DIRECTION θv
θv=2θc+π/2
APPLICATION BY THE MAXIMUM VALUE (PEAK) OF CARRIER
102
VOLTAGE APPLICATION TIMING?
APPLICATION BY THE MINIMUM VALUE (TROUGH) OF CARRIER
103
104
FORWARD VOLTAGE CALCULATION
Vus=(VsO/2) · cos(θv)
Vvs=(VsO/2) · cos(θv+2π/3)
Vws=(VsO/2) · cos(θv+4π/3)
BACKWORD VOLTAGE CALCULATION
Vus=(VsO/2) · cos(θv)
Vvs=(VsO/2) · cos(θv+2π/3)
Vws=(VsO/2) · cos(θv+4π/3)
RETURN

FIG. 4

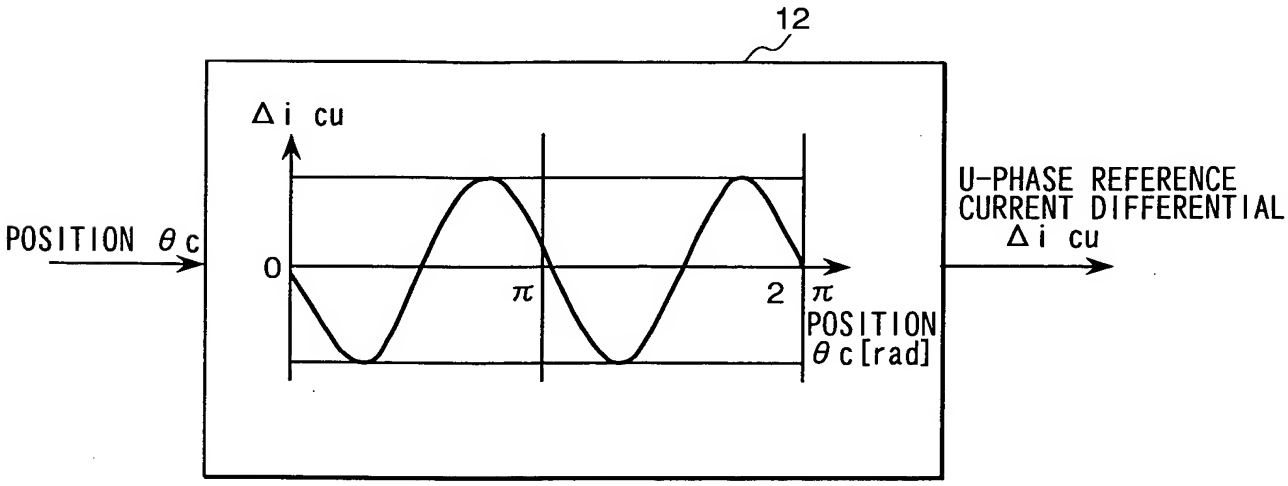
12
Δi cu
POSITION θc
0
π
2π
POSITION θc[rad]
U-PHASE REFERENCE CURRENT DIFFERENTIAL Δi cu

FIG. 5

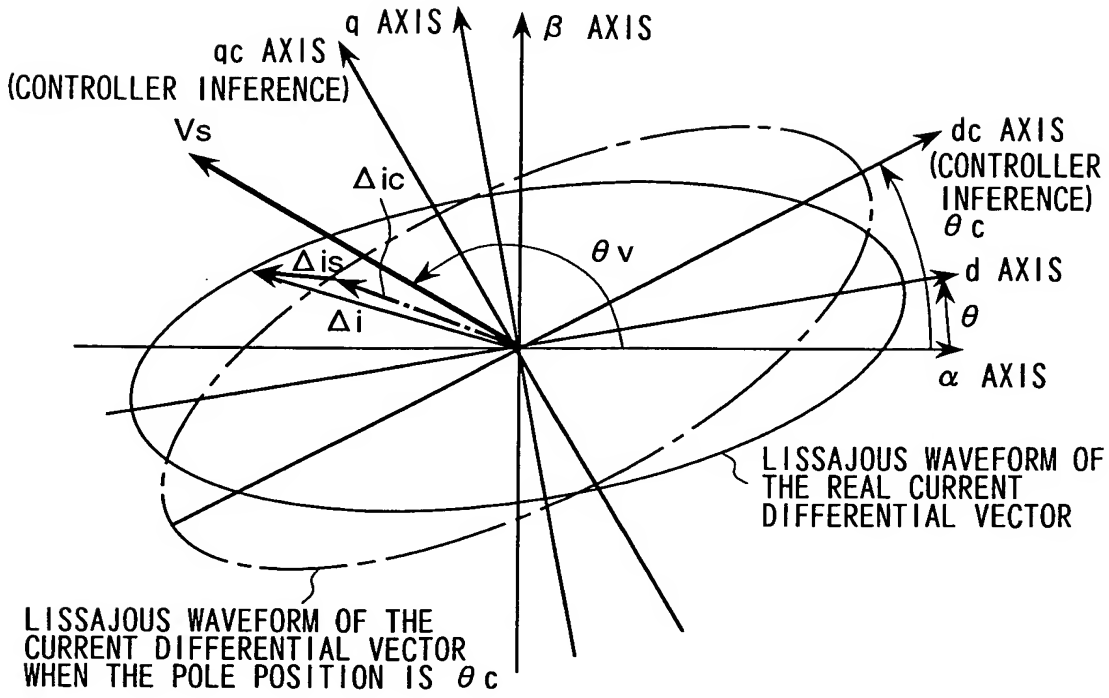


FIG. 6

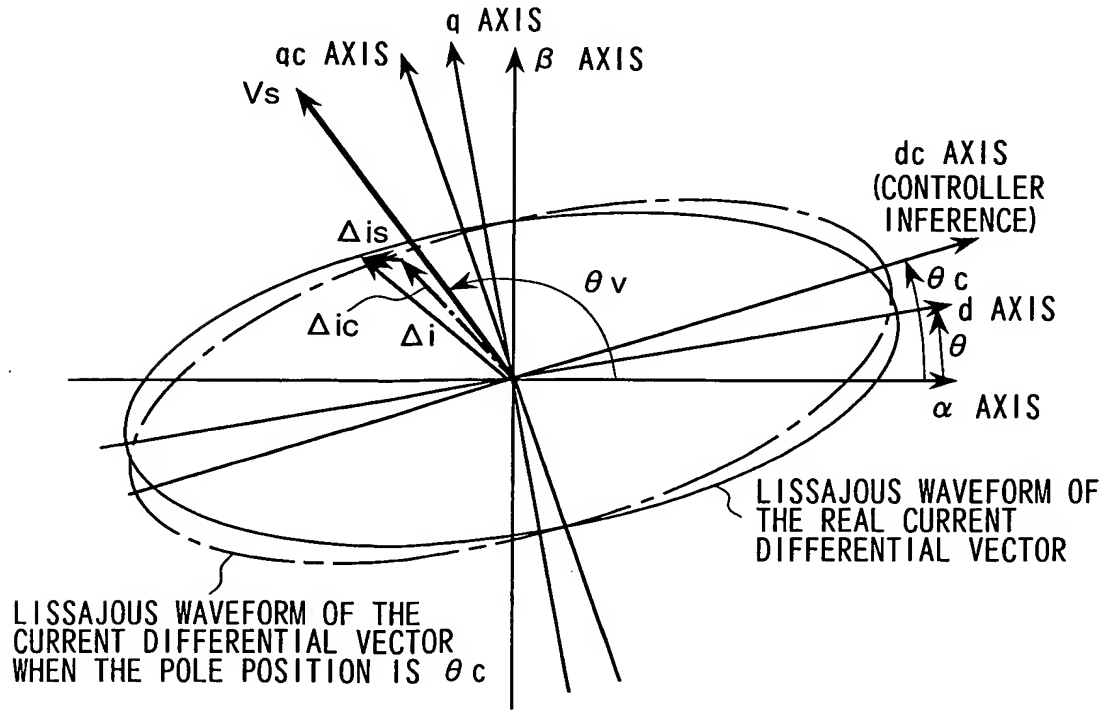


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FIG. 7

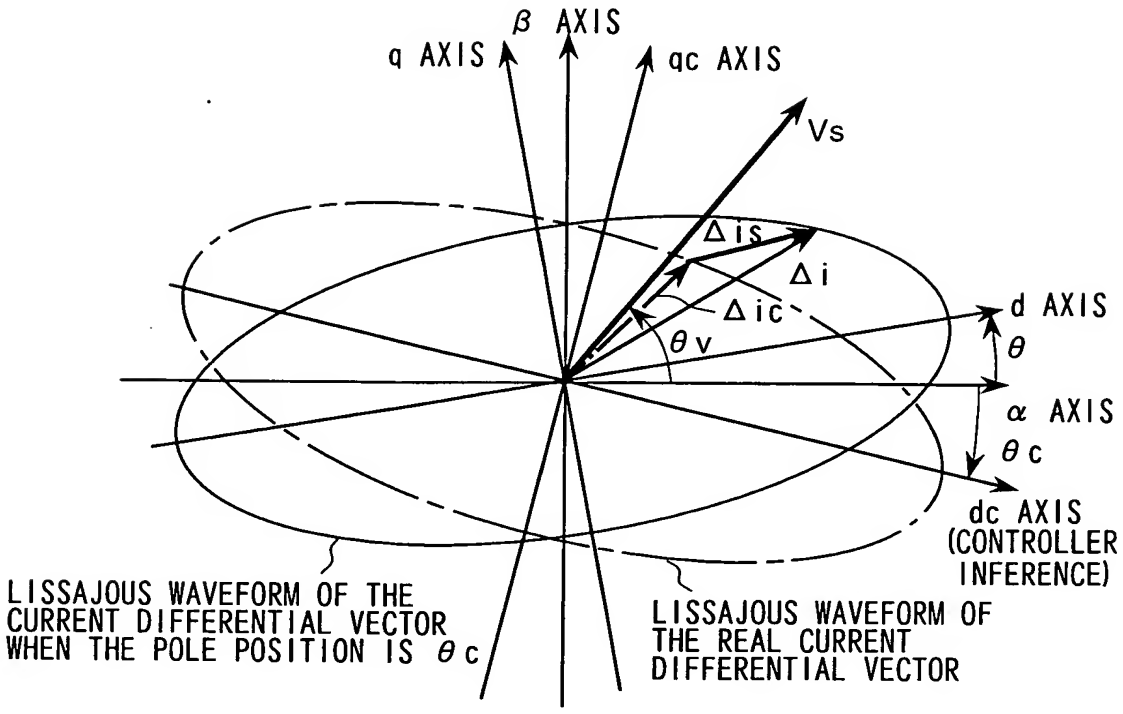


FIG. 9

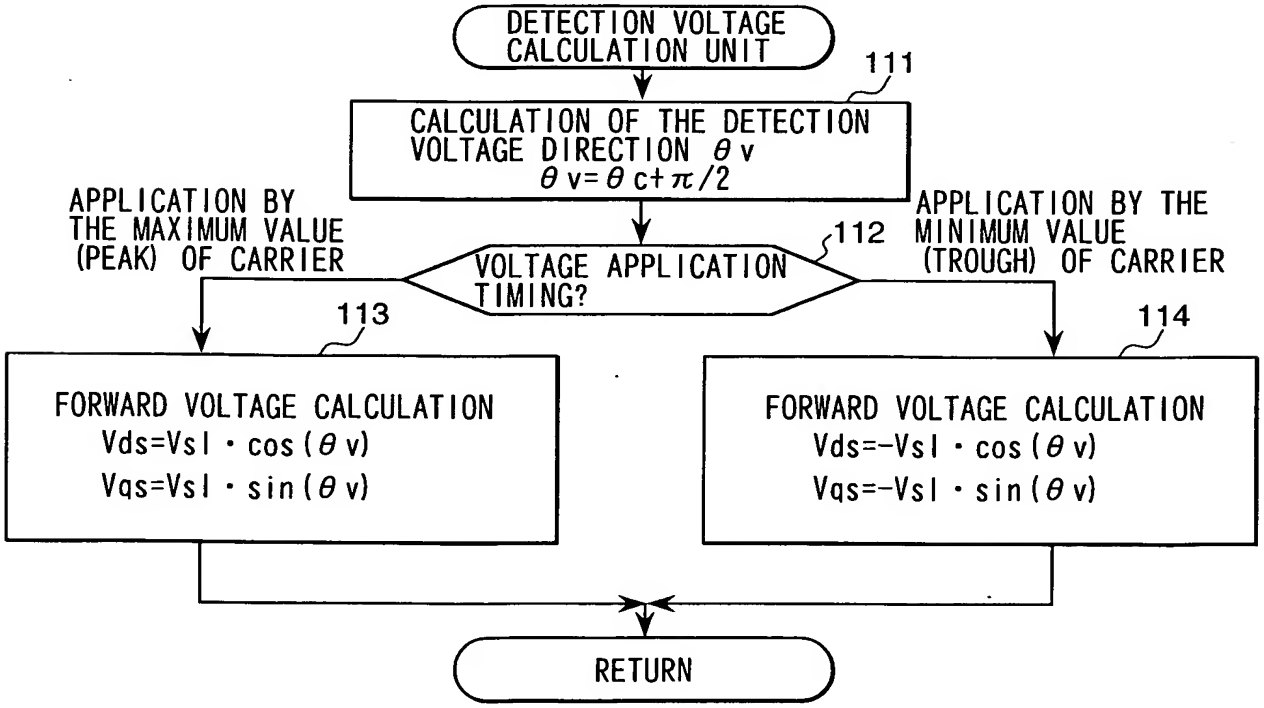

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FIG. 8

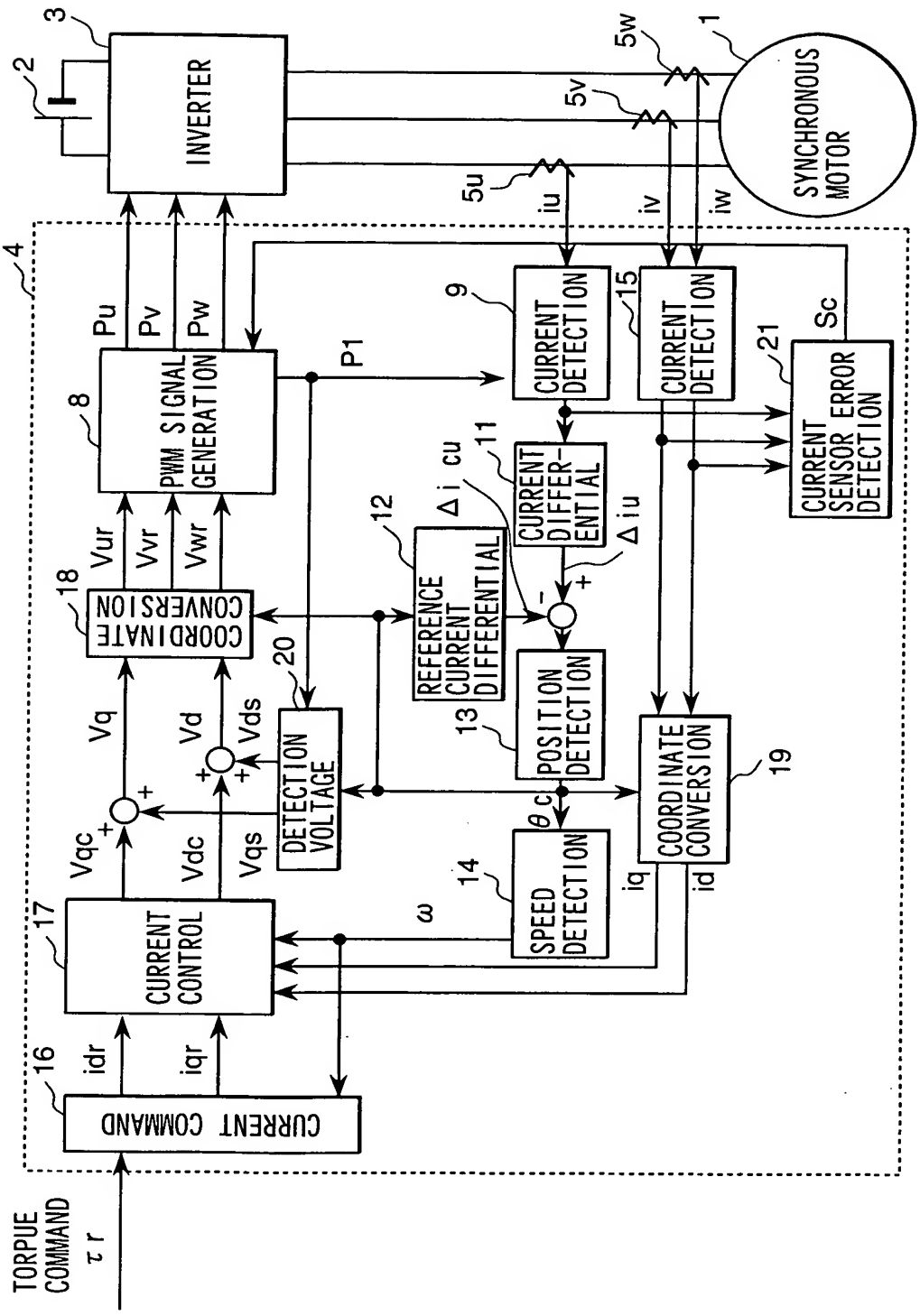

FIG. 10

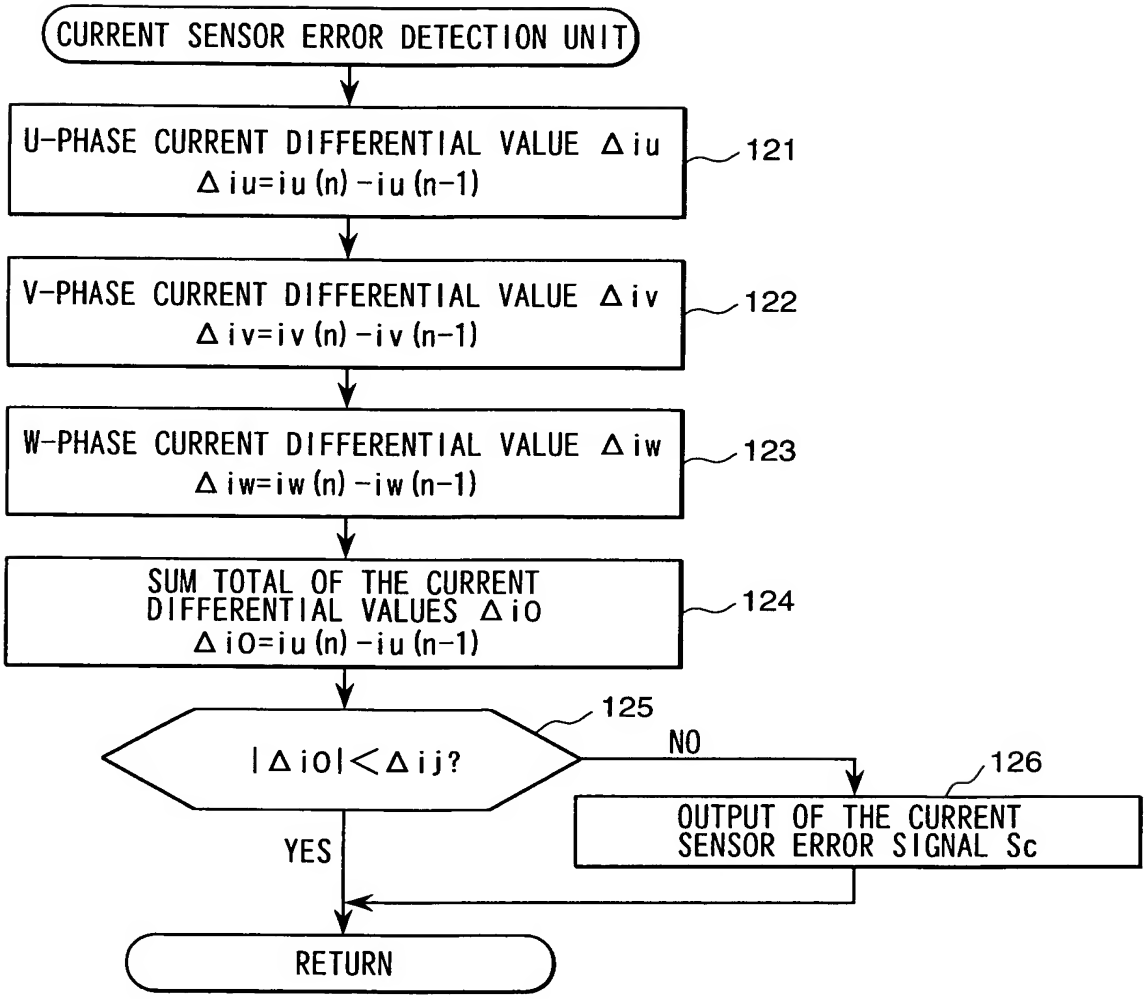


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FIG. 11

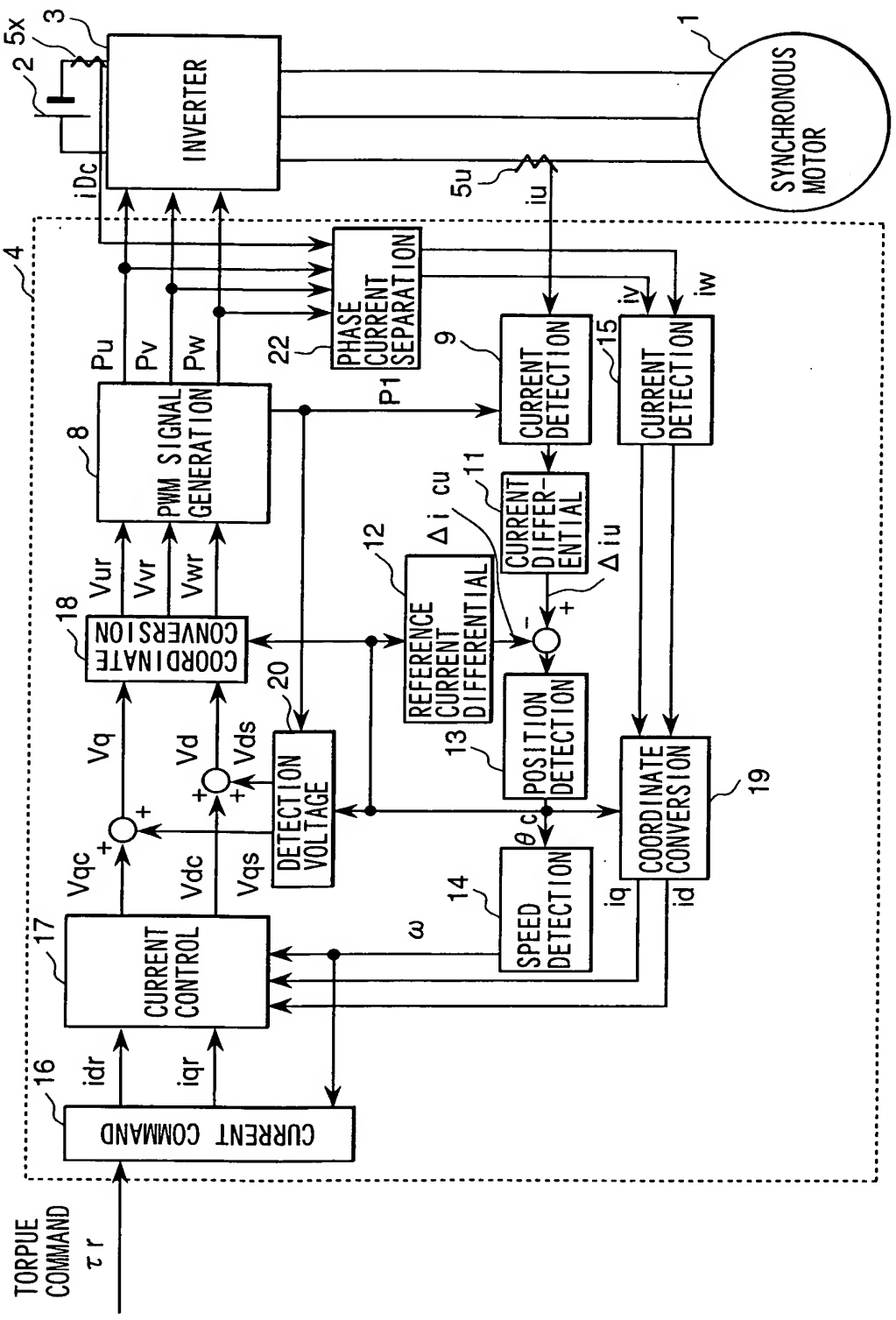

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FIG. 12

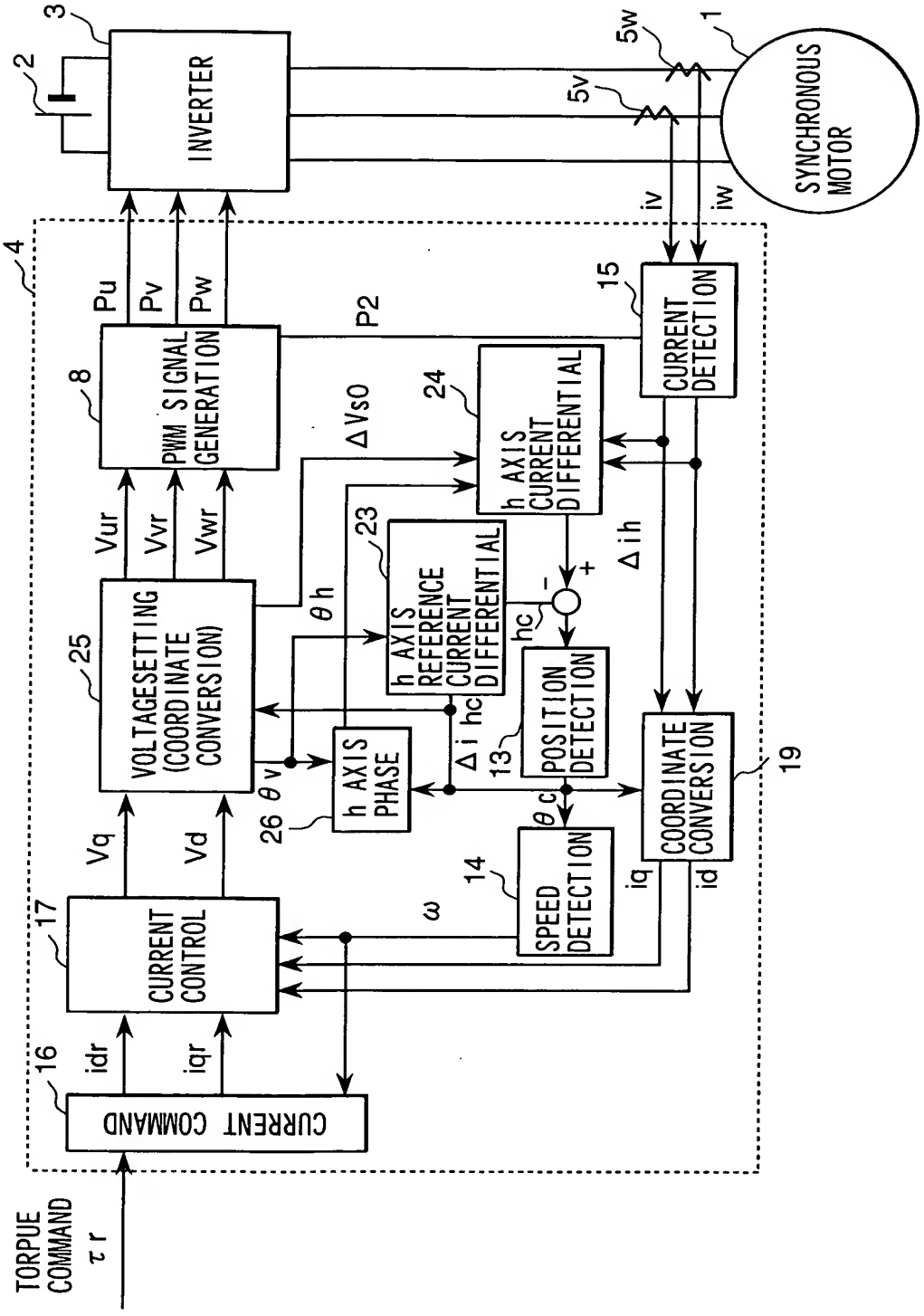

FIG. 13

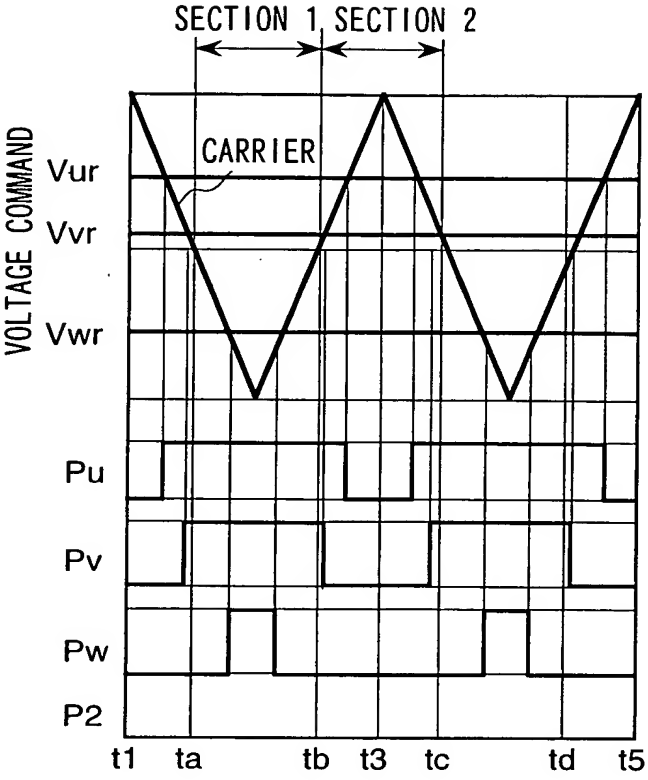


FIG. 16

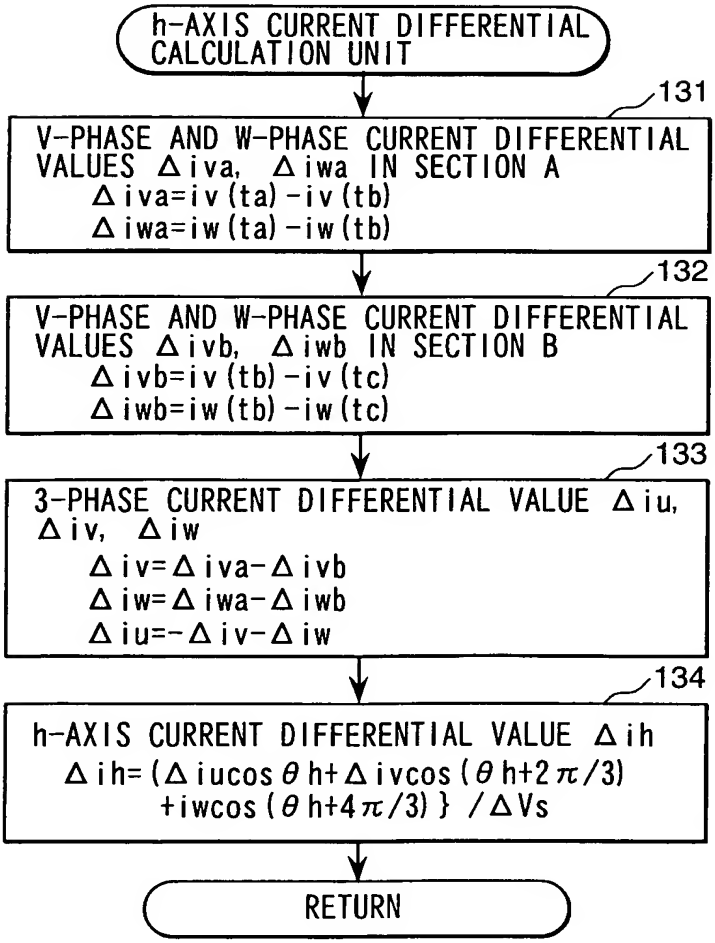


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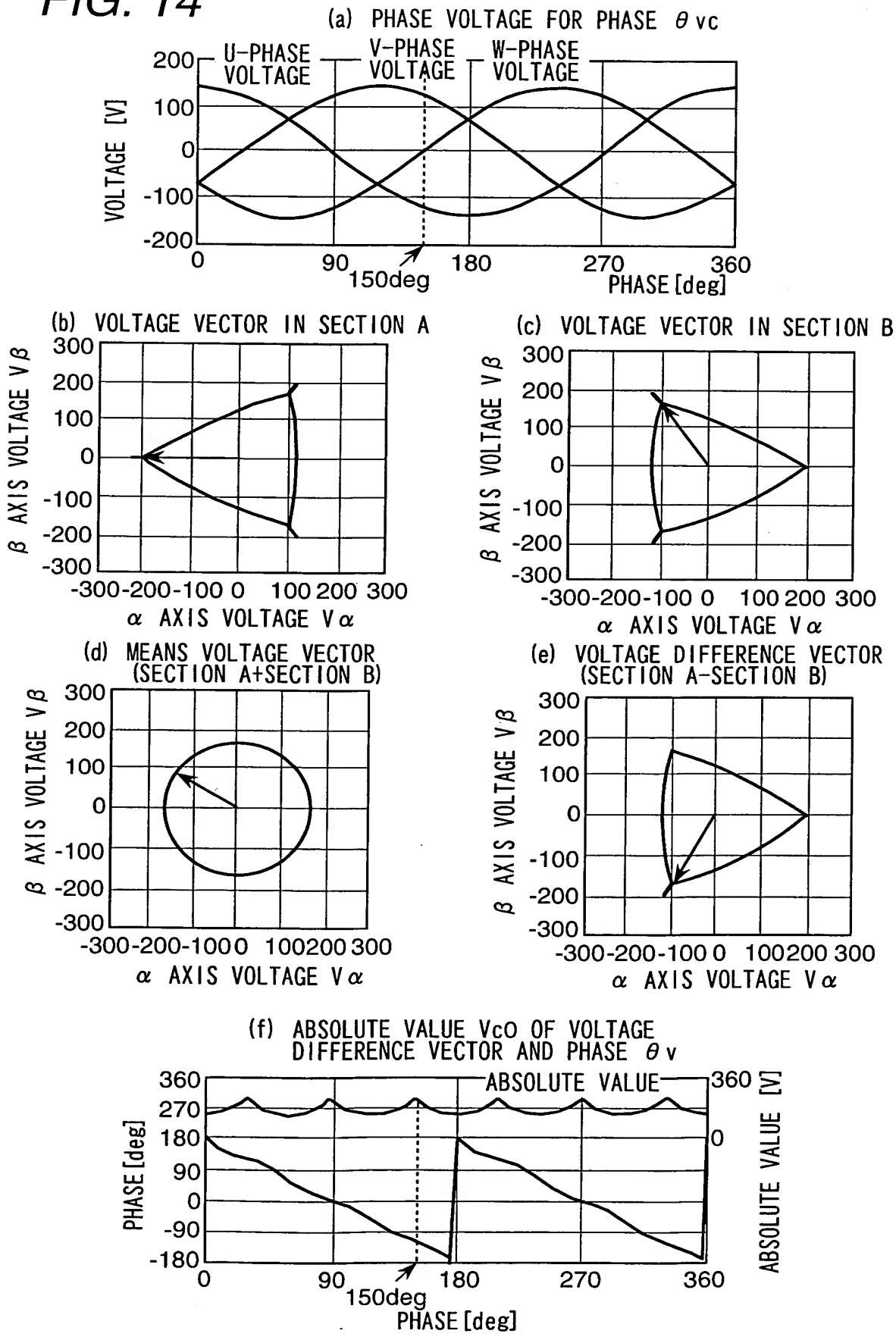
FIG. 14




20220720 7834800T

FIG. 15

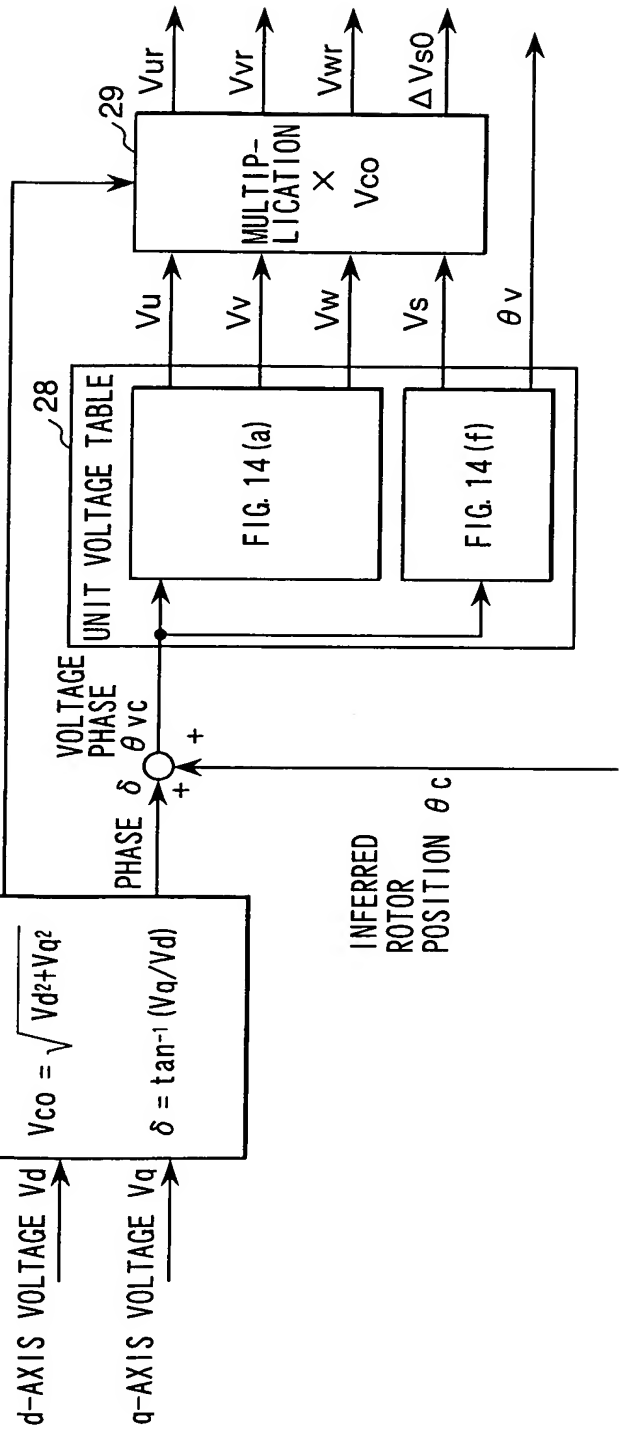

d-AXIS VOLTAGE Vd
q-AXIS VOLTAGE Vq
27
Vco = √(Vd²+Vq²)
δ = tan⁻¹ (Vq/Vd)
ABSOLUTE VALUE OF VOLTAGE Vco
PHASE δ
VOLTAGE PHASE θvc
INFERRED ROTOR POSITION θc
28
UNIT VOLTAGE TABLE
FIG. 14 (a)
FIG. 14 (f)
Vu
Vv
Vw
Vs
θv
29
MULTIP-LICATION
× Vco
Vur
Vvr
Vwr
ΔVs0

FIG. 17

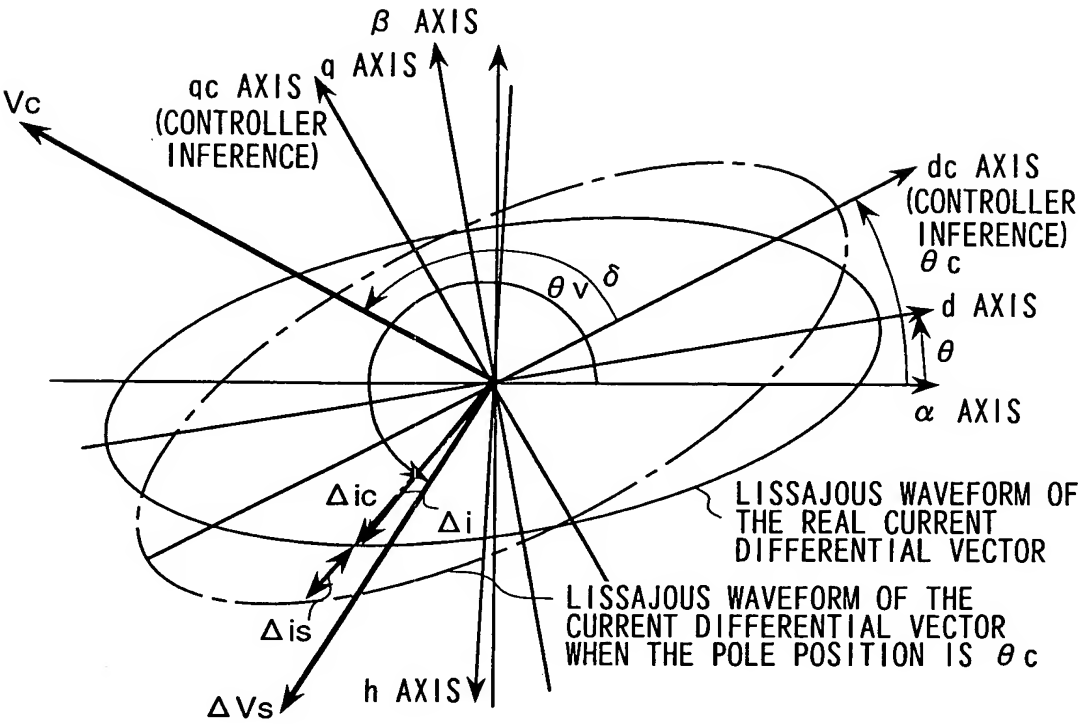

β AXIS
q AXIS
qc AXIS
(CONTROLLER
INFERENCE)
Vc
dc AXIS
(CONTROLLER
INFERENCE)
θc
θv
δ
d AXIS
θ
α AXIS
Δic
Δi
LISSAJOUS WAVEFORM OF
THE REAL CURRENT
DIFFERENTIAL VECTOR
LISSAJOUS WAVEFORM OF THE
CURRENT DIFFERENTIAL VECTOR
WHEN THE POLE POSITION IS θc
Δis
ΔVs
h AXIS

FIG. 19

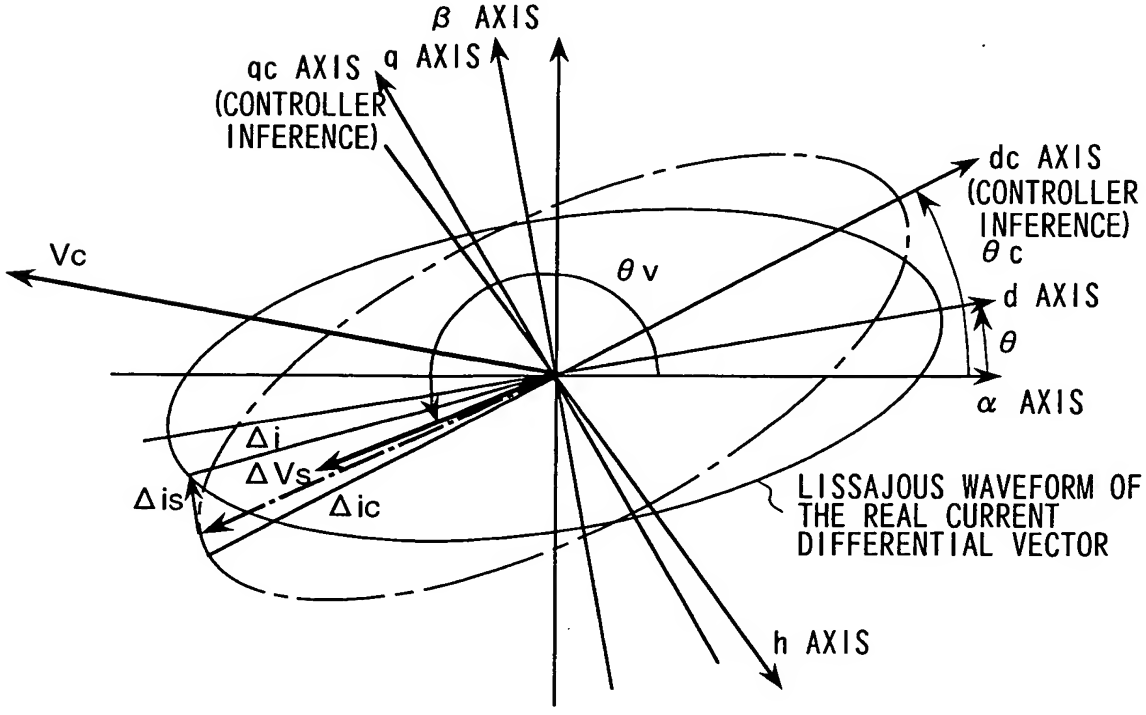
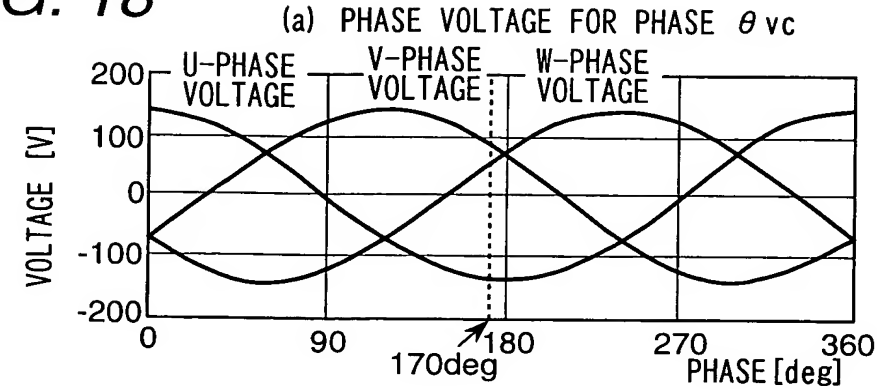
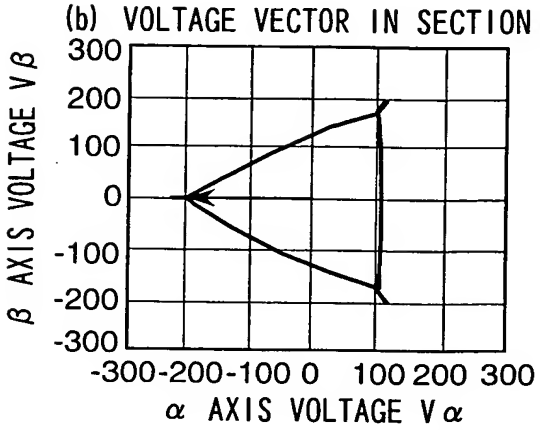
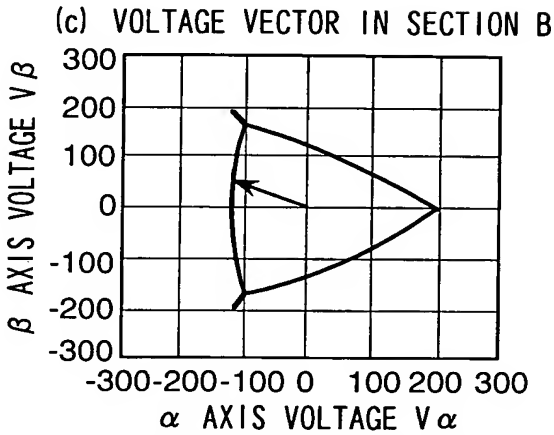
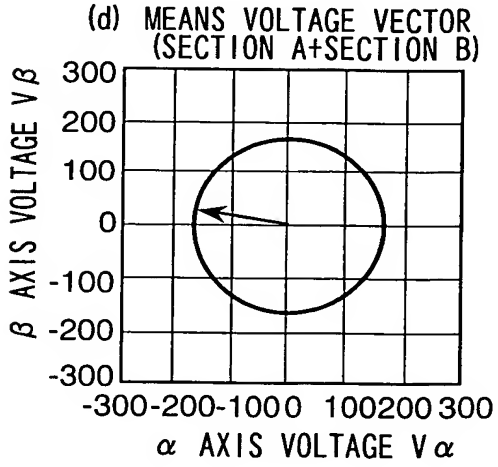

β AXIS
qc AXIS
q AXIS
(CONTROLLER
INFERENCE)
dc AXIS
(CONTROLLER
INFERENCE)
θc
Vc
θv
d AXIS
θ
α AXIS
Δi
ΔVs
Δis
Δic
LISSAJOUS WAVEFORM OF
THE REAL CURRENT
DIFFERENTIAL VECTOR
h AXIS

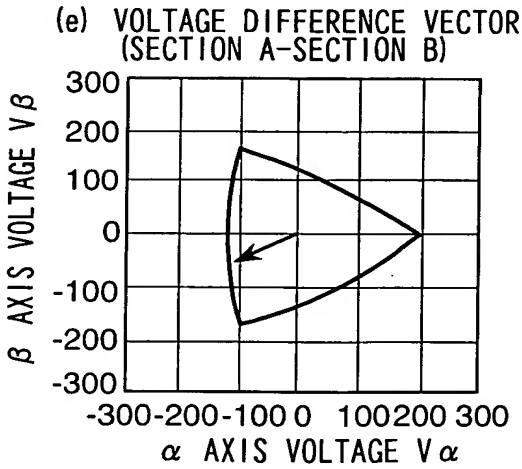
FIG. 18



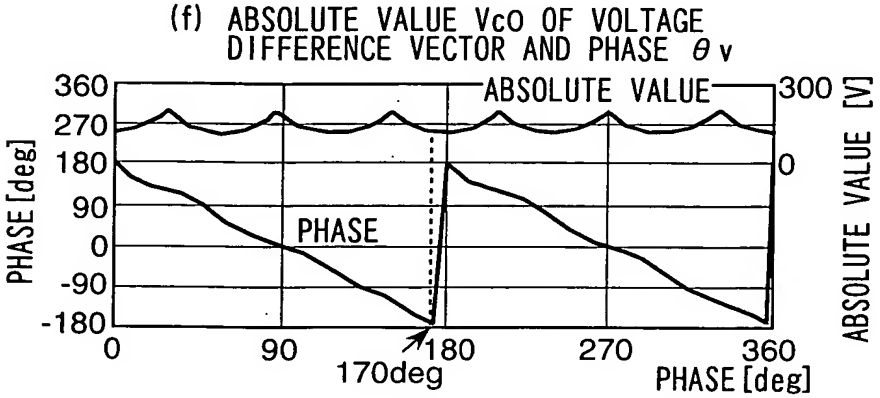




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FIG. 20

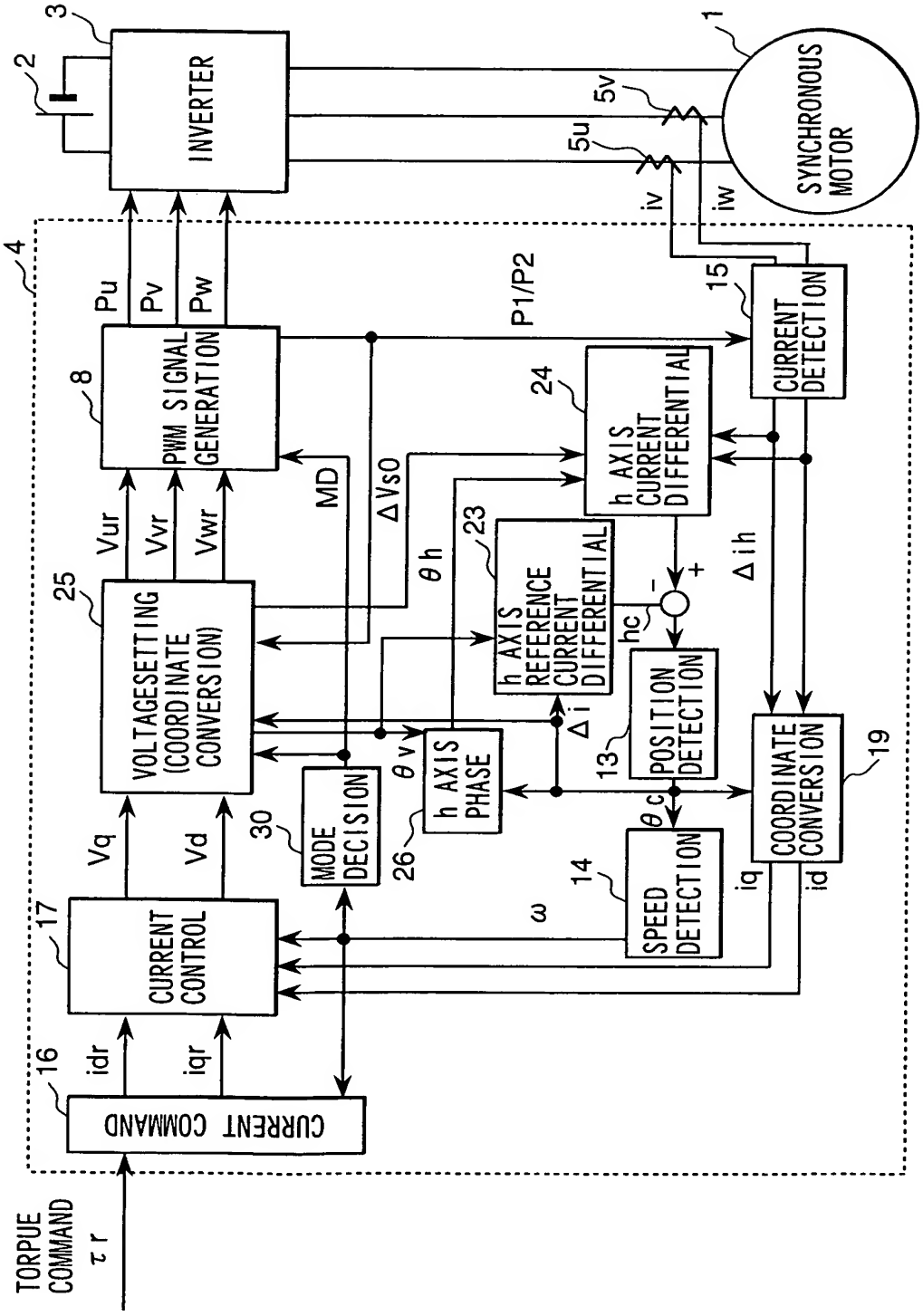

FIG. 21

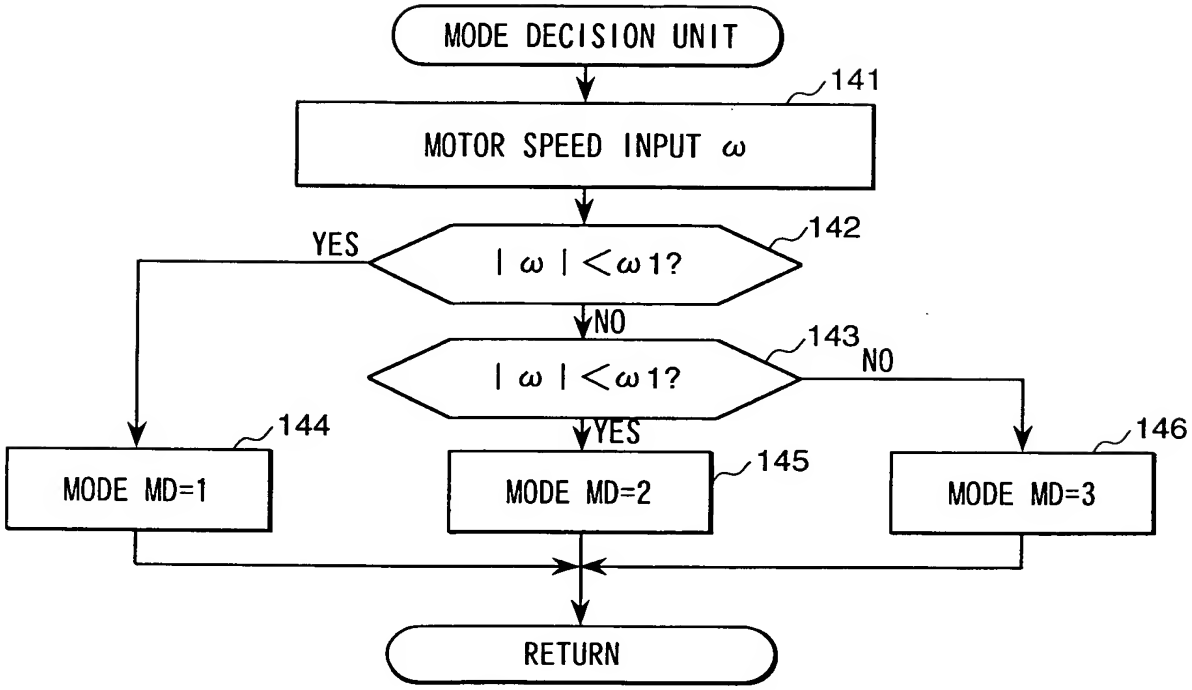


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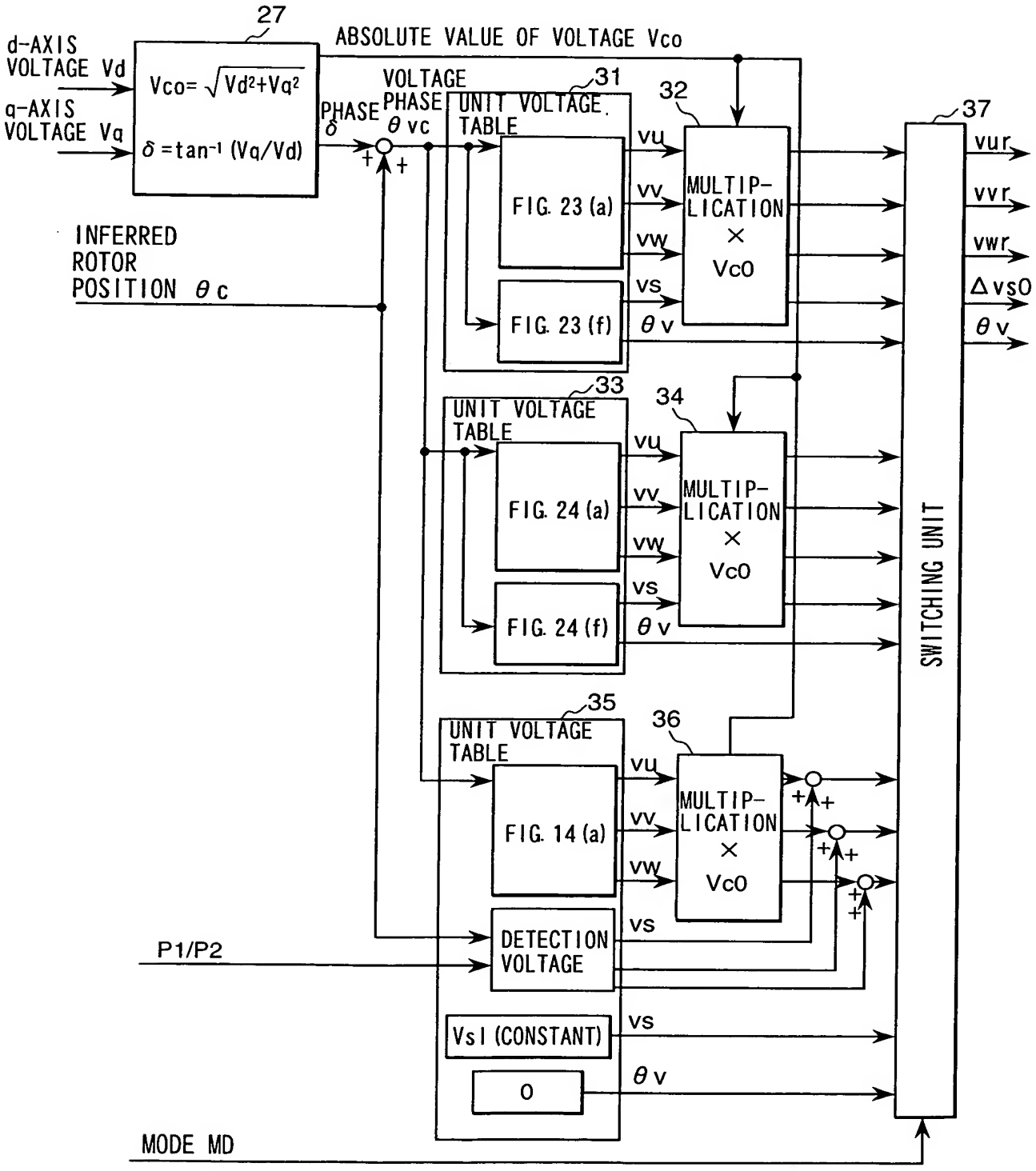
FIG. 22




JP2008-028802

FIG. 23

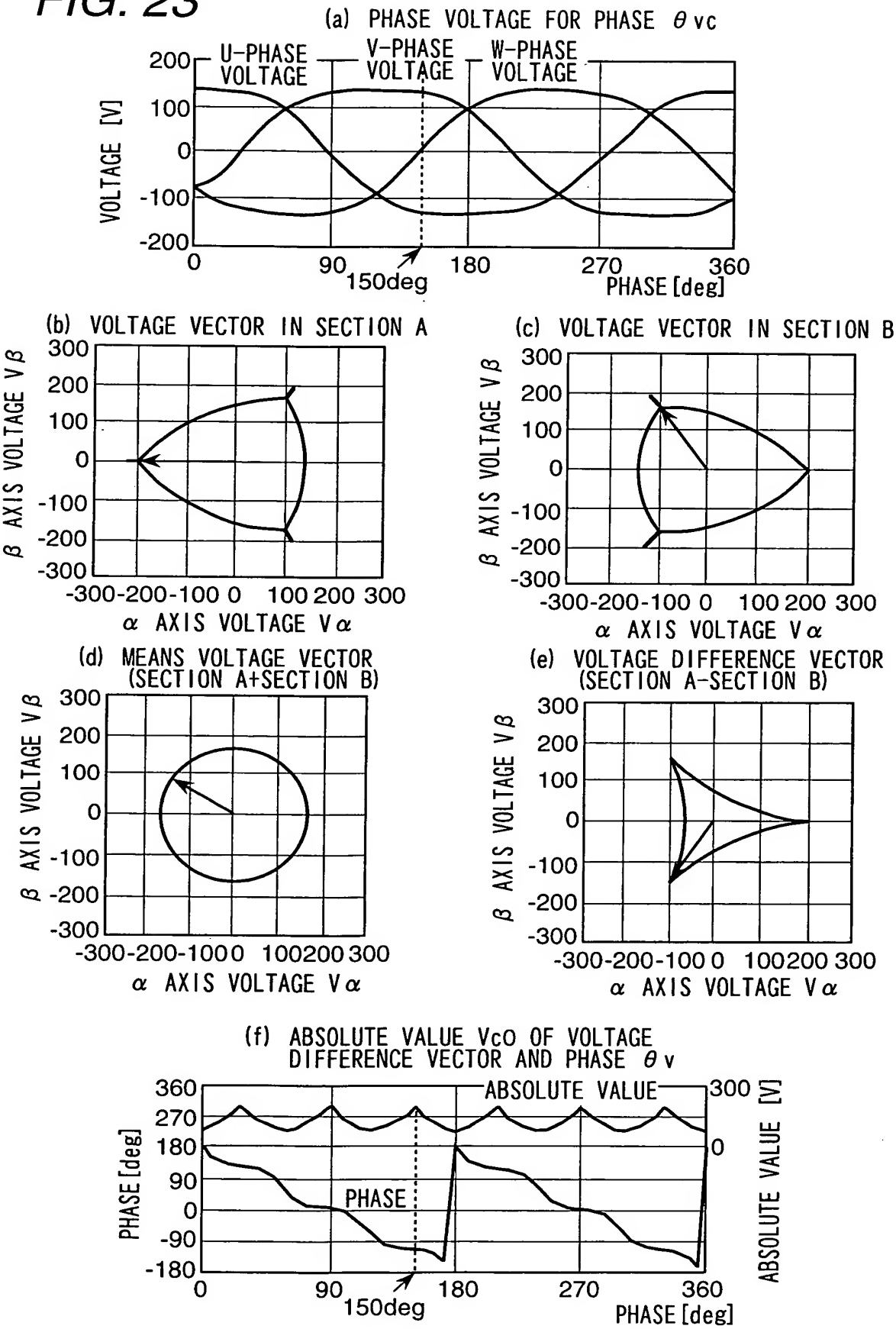



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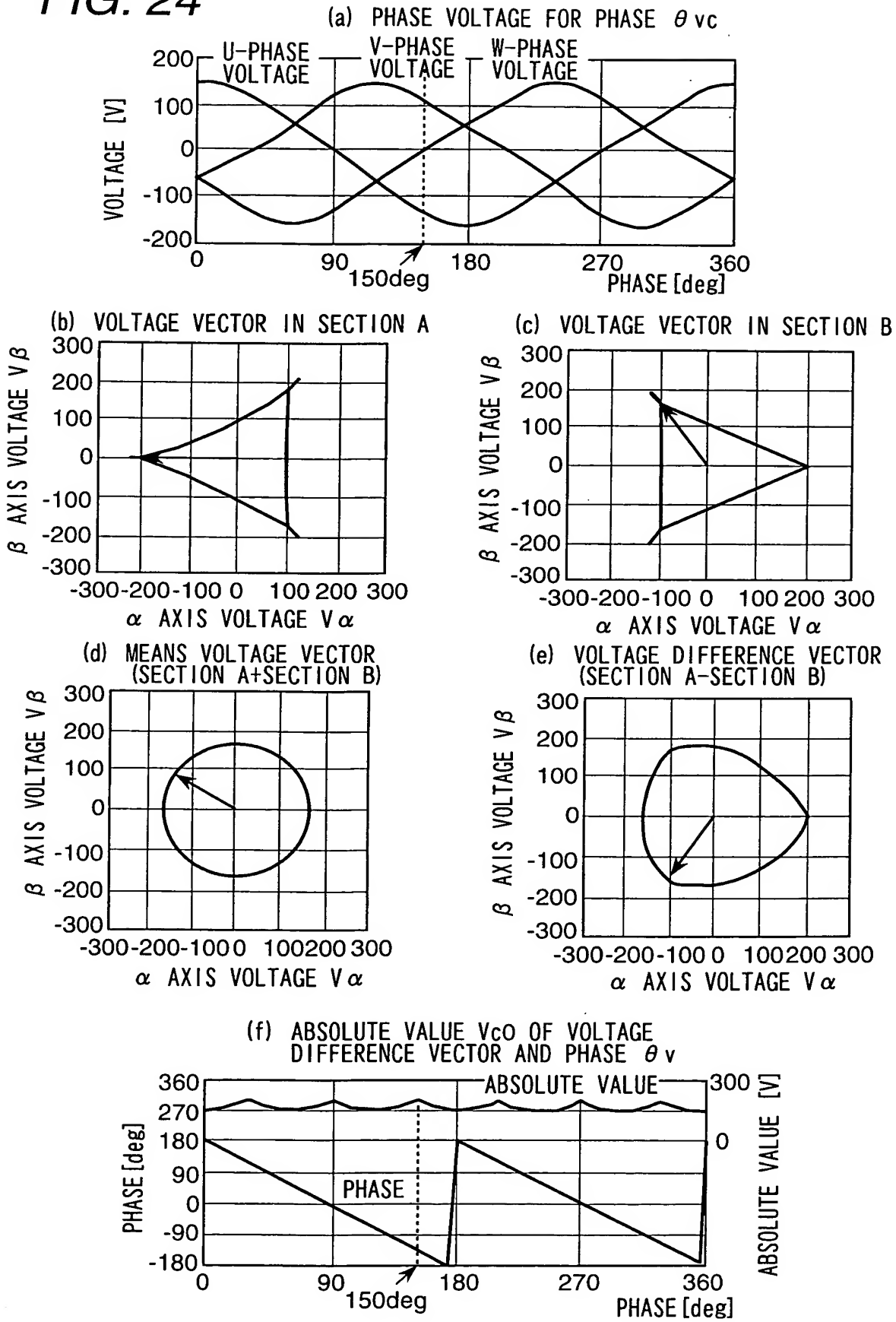
FIG. 24

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